

In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1 1. (Currently Amended) A method of performing a dot
2 product operation with rounding and shifting in a microprocessor
3 in response to a single rounding dot product instruction, the
4 method comprising the steps of:

5 fetching a first pair of elements and a second pair of
6 elements;

7 forming a first product of the first pair of elements and a
8 second product of the second pair of elements;

9 combining the first product with the second product to form
10 a combined product and rounding the combined product to form an
11 intermediate result via an arithmetic adder/subtractor circuit
12 having a first input receiving said first product, a second input
13 receiving said second product and a carry input to a mid-position
14 receiving said rounding value to form the intermediate result;
15 and

16 right shifting the intermediate result a selected amount to
17 form a final result.

Claims 2 and 3. (Canceled)

1 4. (Previously Presented) The method of Claim 1, wherein
2 the rounding value is 2^n and the selected shift amount is $n+1$.

1 5. (Original) The method of Claim 4, wherein n has a fixed
2 value of fifteen.

Claims 6 to 10. (Canceled)

1 11. (Original) The method of Claim 1, wherein the step of
2 combining comprises adding the product of second pair of elements
3 to the product of first pair of elements.

12. (Canceled)

1 13. (Currently Amended) A digital system having a
2 microprocessor operable to execute a rounding dot product
3 instruction, wherein the microprocessor comprises:

4 storage circuitry for holding pairs of elements;

5 a multiply circuit connected to receive a first number of
6 pairs of elements from the storage circuitry in a first execution
7 phase of the microprocessor responsive to the dot product
8 instruction, the multiply circuit comprising a plurality of
9 multipliers equal to the first number of pairs of elements;

10 an arithmetic adder/subtractor circuit having a plurality of
11 inputs each connected to receive a corresponding one of the
12 plurality of products from the plurality of multipliers and a
13 mid-position carry input for mid-position rounding responsive to
14 the rounding dot product instruction; and

15 a shifter connected to receive an output of the arithmetic
16 circuit, the shifter operable to shift a selected amount in
17 response to the rounding dot product instructions.

Claims 14 to 24. (Canceled)